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ABSTRACT

A series of four studies (employing combinations of multiple baseline and reversal designs) examined the effects of both antecedent and consequent events on the social interactions of four primary grade withdrawn children. These four experiments were conducted during the first year of pilot-testing a program aimed at increasing the social interaction skills of withdrawn children in the regular primary grades. The experiments were all short term interventions designed to evaluate the application of different treatment procedures. The specific procedures tested were: (1) joint task (assignment of the subject and a peer to work at a specific task requiring alternating verbal interaction); (2) individually contingent teacher praise; and (3) three forms of contingent token reinforcement: individually contingent praise plus points with individual backups; individually contingent praise plus points with a backup shared by the entire group; and a crossover contingency in which the subject earned points for group initiations, the group earned points for subject initiations, and the backups were delivered only after both the subject and the group met a specific criterion. The four studies, in various combinations, compared: (1) an individual praise contingency to joint task; (2) the three forms of contingent token reinforcement; and (3) the effects of the individual reinforcement group backup procedure in an academic setting to one implemented during recess. Results suggest that the joint task procedure is most effective in the classroom setting and that the individual reinforcement contingency with a group backup is most effective during recess. (Author/BD)

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Increasing Interactive Behavior of Withdrawn Children in the Regular Classroom

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Assessments and Interventions

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Increasing Interactive Behavior of Withdrawn Children in the Regular Classroom

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A series of four studies examined the effects of both antecedent and consequent events on the social interactions of four primary grade withdrawn children using combinations of multiple baseline and reversal designs. These four experiments were conducted during the first year of pilot testing a program to increase the social interaction skills of withdrawn children in the regular primary grades. The experiments were all short term interventions designed to evaluate the application of different treatment procedures.

The specific procedures tested were: (a) Joint Task (JT) -- assignment of the subject and a peer to work at a specific task requiring alternating verbal interaction; (b) Individually Contingent Teacher Praise (IP); (c) three forms of contingent token reinforcement, (a) individually contingent praise plus points with individual backups (IPPB), (b) individually contingent praise plus points with a backup shared by the entire group (IPPGB), and (c) a cross-over contingency (Walker & Hops, 1973) in which the subject earned points for group initiations, the group earned points for subject initiations, and the backups were delivered only after both the subject and the group met a specific criterion (CROSS).

The four studies, in various combinations, compared (a) an individual praise contingency to Joint Task, (b) the three forms of contingent token reinforcement, and (c) the effects of the individual reinforcement group backup procedure in an academic setting to one implemented in recess.

Method

Subjects and Setting

Three girls and one boy were selected as subjects for the experiments.

All were enrolled in regular classrooms in the Eugene (Oregon) public school district 4-J and were referred by their teachers as having low rates of social interaction with classmates and/or being deficient in the social skills necessary to initiate and maintain social interaction with their peers. Criteria for accepcing these children were: (a) five days of observational data during which the subjects were consistently lower than their peers in rates of social interacting or total duration of time interacted; (b) agreement to participate by the classroom teacher(s); and (c) written parental permission for the child to participate in the treatment program.

The experiments were conducted in the classroom setting in three of the studies and in both the classroom and recess in the fourth. In each study, data was also collected in a third no-treatment control period. In-class periods were either the more structured academic variety or less structured activity sessions. Generally, the subjects worked in small groups or at independent seat work during which time they were also free to interact.

Observations

In three of the four studies, observations were performed using the PIRS coding system described in Garrett, Hops, and Todd in the present symposium. Data was collected in the classroom on each of the target subjects using the IIC and on their respective peers using the PTC. No recess data was collected on the peer group using the PTC because peer responding was too high rate and and the physical area to be covered too large for accurate reliable observations.

In Experiment IV, interaction rate was found not to discriminate between the referred child and her respective peers. Informal observations indicated that she had frequent but brief interactions that were not maintained. Since the PTC did not record duration of peer interactions, a second peer group contrast procedure was developed which provided an estimate of the percent of time peers spent interacting. Using this estimate of peer social behavior, a subject/

peer discrepancy was confirmed.

The procedure to provide an estimate of the percent of time peers spent interacting used an interval coding procedure as follows: in each 8-second interval the peer group observer scanned the room, counted and recorded the number of students, other than the target, engaged in interactions. At the end of the period, each recorded peer was given credit for 8 seconds of interaction, and an estimate of the entire groups' percent of time interacting was computed. The total number of tallies multiplied by 8 seconds divided by the size of the peer group divided by the length of time of the observation session (in seconds) was computed.

Agreement checks using this code were found to range from .90 to 1.00 with a mean agreement of .95 over 14 checks. The correlation compiled between the 14 pairs of scores was .97 ($p < .01$).

Experiment I

The first study examined the effects of teacher praise and teacher praise plus points and individual backups on the interactive behavior of a 5-year old kindergarten girl. The treatment was introduced in multiple baseline fashion in two classroom activity periods for 15 minutes daily. A recess period served as a no-treatment control period.

Procedures

After 7 days of baseline in Activity Period 1, teacher praise (IP) was introduced contingent upon subject verbal behavior directed at any peer. A verbal response included single words, phrases, or conversation. Careful attention was directed at not interrupting the natural flow of social interaction. The teacher was instructed to wait until each interaction had ended before delivering the praise. Four days later praise was introduced in the same fashion in Activity Period II. The IP condition lasted 5 days in each

period.

Individual points for an individual backup reinforcement was added to teacher praise in Activity Period I and three days later in Activity Period II. The subject earned on point for each verbal response made to peers up to a maximum of three points per minute. If the subject was engaged in verbal interaction for a complete minute, the three points and praise were delivered at the end of the interaction, thus reinforcing continuous verbal responding. The IPPB was maintained for 10 days in each activity period. Only 2 days of posttreatment data were collected before Christmas holidays began.

Results and Discussion

The results, graphically presented in Figure 1, indicated that IP was not effective in increasing the subject's interaction rate. While the mean rate increased from .08/min at baseline to .25/min under the praise condition in Activity Period I, the reverse was true for Activity Period II where the mean rate was decreased by half from .31/min to .15/min. The differential effect during the two settings precludes definite conclusions about the effectiveness of IP on subject interaction rate. A concomitant increase in the rate of peer interactions was noted in both periods.

Insert Figure 1 About Here

IPPB was slow to take effect during Activity Period I, but from the 5th day on a considerable increase in the subject's interaction rate was noted. The mean rate of interaction over the entire condition was .65/min. Gains were also noted in Activity Period II, the subject's mean rate changing to .70/min under token reinforcement. However, the increase was more variable than in Activity Period I. The two days of posttreatment data indicated that the gains in subject interaction rate did not persist with return to baseline conditions.

Observations during recess indicated that behavior change did not generalize to that setting. Peer interaction rate which showed an increase during the teacher praise condition returned to baseline levels after praise alone was discontinued and remained there for the duration of the experiment.

Experiment II

The next study first examined the effect of a programming component, Joint Task (JT), and secondly, the effect of IPPB as in Experiment I. The subject was a third grade girl and the interventions were carried out in both an academic and less structured activity period. Recess data were also collected but no treatment introduced in that setting. A combination multiple baseline and reversal design was used.

Procedures

The JT procedure was introduced in the Academic Period after a 5-day baseline and 3 days later in the Activity Period. The teacher was instructed to prepare materials for the JT condition. The tasks involved two-child activities that required alternating verbal interaction. Examples of such tasks are presented in Table 1. The tasks used were appropriate for the specific activity.

Insert Table 1 About Here

At the beginning of each period the teacher paired up all of her students and assigned each pair a specific task. At the end of the 15-minute period, the subject and peers were permitted to continue the joint task or change activities as they desired.

The JT condition was maintained for 5 days in each period, followed by a 3-day return to baseline. Next, IPPB was instituted as in Experiment 1 in both periods. A 5-day return to baseline was introduced in Period I only. The

The beginning of the Cnristmas holiday precluded the collection of more data in Period II.

Results and Discussion

The rates of social interaction for each of the three periods are presented in Figure 2. They show that interaction rates increased for both subjects and

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Insert Figure 2 About Here

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peers in the Academic Session under JT. The mean baseline rates for the subject and peers were .16/min and .54/min, respectively, compared to JT rates of .82/min and 1.80/min, respectively. The effect in the Activity Session was not as marked. The subject's mean rate increased from the baseline rate of .66/min to .86/min in JT; the corresponding mean rates for peers were .70 and .87, respectively. No decrease in interaction rates was noted under Baseline 2 conditions for the subject and for the peers in the Activity Period. The subject had been provided a structure which she continued to use, asking her peers to cooperate on one of the JT activities.

An increase in rate during the IPPB condition occurred only in the Activity Session. The lack of a systematic effect across both conditions replicated the findings of Experiment I, indicating that this procedure was not very powerful nor predictable. The recess data indicated no generalization across settings.

Experiment III

The third study examined the effects of three reinforcement procedures using a multiple baseline design. The subject was a third grade boy. The settings consisted of one morning academic period of language arts and one afternoon activity period. Recess data provided a no-treatment control baseline.

Procedures

Each of the treatment conditions lasted 5 days and were introduced in the Academic Period first with a 3-day delay before their introduction in the Activity Period. The order of introduction was (a) IPPB as used in Experiment I and II, (b) individually contingent teacher praise paired with points plus a group backup (IPPGB), and (c) a combined individual group crossover contingency (CROSS).

The first condition was identical to that used in Experiment I and II. The second treatment condition substituted a group backup for the individual reinforcement which consisted of group games, free time, etc. The crossover contingency involved a major shift in the procedures. The reinforced behavior in this condition was not general verbal interaction but initiations (a) by the subject to peers and (b) by the peers to the subject. The subject earned points each time a peer initiated to him; conversely, the peers earned points each time the subject initiated to one of them. The points could be exchanged for an individual reward for the subject and a group reward for the entire class including the subject. No reinforcement was delivered unless the subject and peers had met a pre-established criterion based on the mean of the previous 3 days.

Results and Discussion

The results presented in Figure 3 indicate that the IPPB produced increases

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Insert Figure 3 About Here

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in the subject's interaction rate but were slow to take effect and highly variable, replicating the effects produced in Experiment I and II. However, the IPPGB and the crossover contingency produced dramatic increases in the subject's interaction rate in both the academic and activity periods.

The mean rates for the subject in the academic period were .13/min, .49/min, 1.65, and 1.40 across the baseline, individual backup, group backup and crossover, respectively. The corresponding subject interaction rates for the activity period were .50/min, 1.18/min, 2.38/min and 2.48/min, respectively. A return to baseline condition in both periods indicated that the gains produced by the different treatments were not maintained. Recess data showed no generalization to that setting. No significant trends were noted in peer data.

Experiment IV

The last study in this series implemented the procedure found to be most cost effective in the previous studies, i.e., the IPPGB in a recess setting as well as in the classroom. The objective was to compare the effectiveness of the procedure in two different settings, one in which social interaction was the primary socially sanctioned behavior. The subject was a kindergarten girl; the classroom period in which the treatment was implemented was of the activity type. A second activity period served as a no-treatment control session. The major dependent variable used in Experiment IV was the percent of time interacting as opposed to rate of interaction used in the other studies (see Observation section).

Procedures

After 8 days of baseline, the IPPGB procedure was implemented in the recess period first with a 4-day lag before its introduction in the classroom. The reinforcement procedure was changed somewhat in order to correspond with the dependent variable percent of time interacting as recorded on a stopwatch which recorded time cumulatively. The watch was activated when the subject was engaged in interaction and deactivated when interaction ceased. Daily treatments lasted 10 minutes in class and 15 minutes in recess for 10 days in

each setting. Following the treatment condition, a second baseline phase was introduced for 5 days in the class and 8 days in recess.

Results and Discussion

The percent of time interacting for all three periods is shown in Figure 4.

Insert Figure 4 About Here

The percent of time interacting more than doubled in each period after the procedure was implemented. The subject interactions increased from a mean of 21% to 49% in recess and from 9% to 19% in the classroom. A return to baseline had a more immediate effect in the classroom decreasing on the first day to an overall mean of 9%, identical to the first baseline period. In contrast, the daily percent of time spent interacting during recess remained as high in the second baseline period as it did during the treatment condition. Only the last 2 days showed a marked decline. The overall percent time interacting was 52%. No appreciable trends in any direction were noted during the second activity session for the subject or peers.

General Discussion

These four experiments were conducted to apply and to evaluate a number of procedures for increasing the interactive behavior of socially withdrawn children in the primary grades. The results of these experiments will be further researched during a second year of pilot testing in the regular classrooms. Some of the indications for our future research programs may be summarized in the following points.

The Joint Task procedure is highly effective in increasing social behavior in the classroom. Its use in a variety of classroom periods with academically related and nonacademic activities gives it a wide range of application. In

view of the apparent nonreversible effects after a short period of JT, its use in a longer time intervention is highly promising. Further research is required in this area.

The two procedures, ITP or IPPB did not produce consistently significant increases in interactive behaviors for these withdrawn children. Perhaps a longer period under the same conditions would be more effective. However, since more powerful procedures are available in the form of JT and IPPGB the continued use of these techniques is not warranted.

In contrast, the use of group backup rewards with individually contingent praise and points and the crossover contingency were both equally effective. The latter, however, is much more complex and hence difficult to administer procedurally. Thus, it appears that IPPGB was the best overall token reinforcement procedure for the withdrawn subjects in these studies.

The final study strongly suggests that the recess setting best lends itself to a token reinforcement program to increase social interaction. There are no competing responses as occur in the classroom where regular academically related behaviors are at high rate, interfering with social skill practice. In recess, the target child is encouraged to display those skills which are regularly and naturally reinforced by the peer group.

In summary, the four studies suggest that a package for remediating socially withdrawn behavior should include a Joint Task procedure for use in the classroom and an individual reinforcement contingency with a group backup for social interaction during the recess period. Next year's activities will evaluate this package.

Table 1

Joint Task Description

Our Definition: A two-child task that requires taking turns in order to proceed successfully (tasks requiring alternating verbal behavior are emphasized).

Joint Tasks Would Include:

1. Taking turns reading word cards with a classmate.
2. Taking turns spelling words with a classmate.
3. Playing "20 Questions" with a classmate.
4. Playing a "Describe and Guess" game with a classmate.
5. Playing "Chutes and Ladders" with a classmate.
6. Playing "Candy Land" with a classmate.

Joint Tasks Would Not Include:

1. Drawing a picture with a classmate.
2. Looking at a book with a classmate.
3. Writing a story with a classmate.
4. Decorating the bulletin board with a classmate.

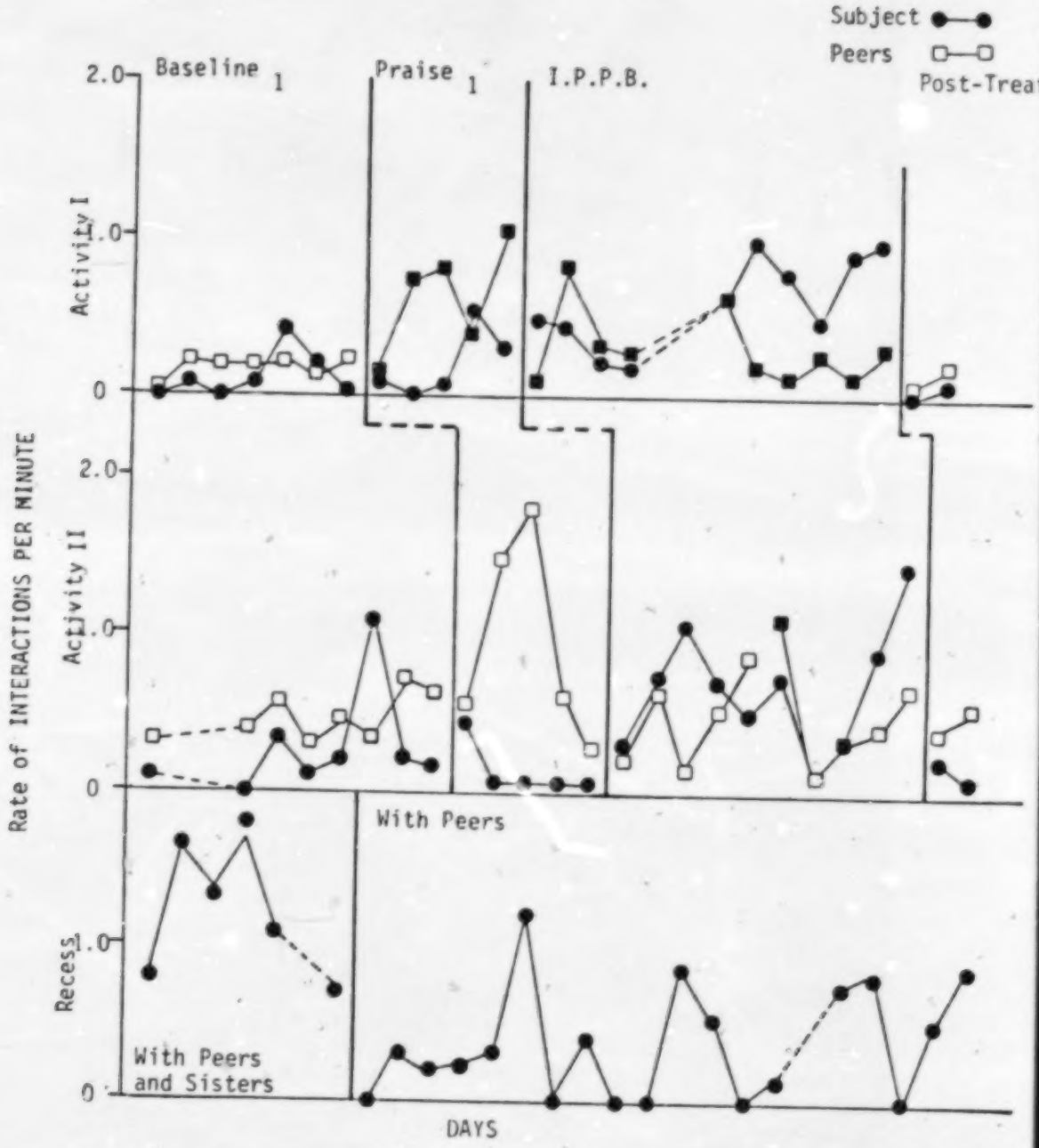

Figure 1. Mean daily interaction rates for subject and peers across settings and p

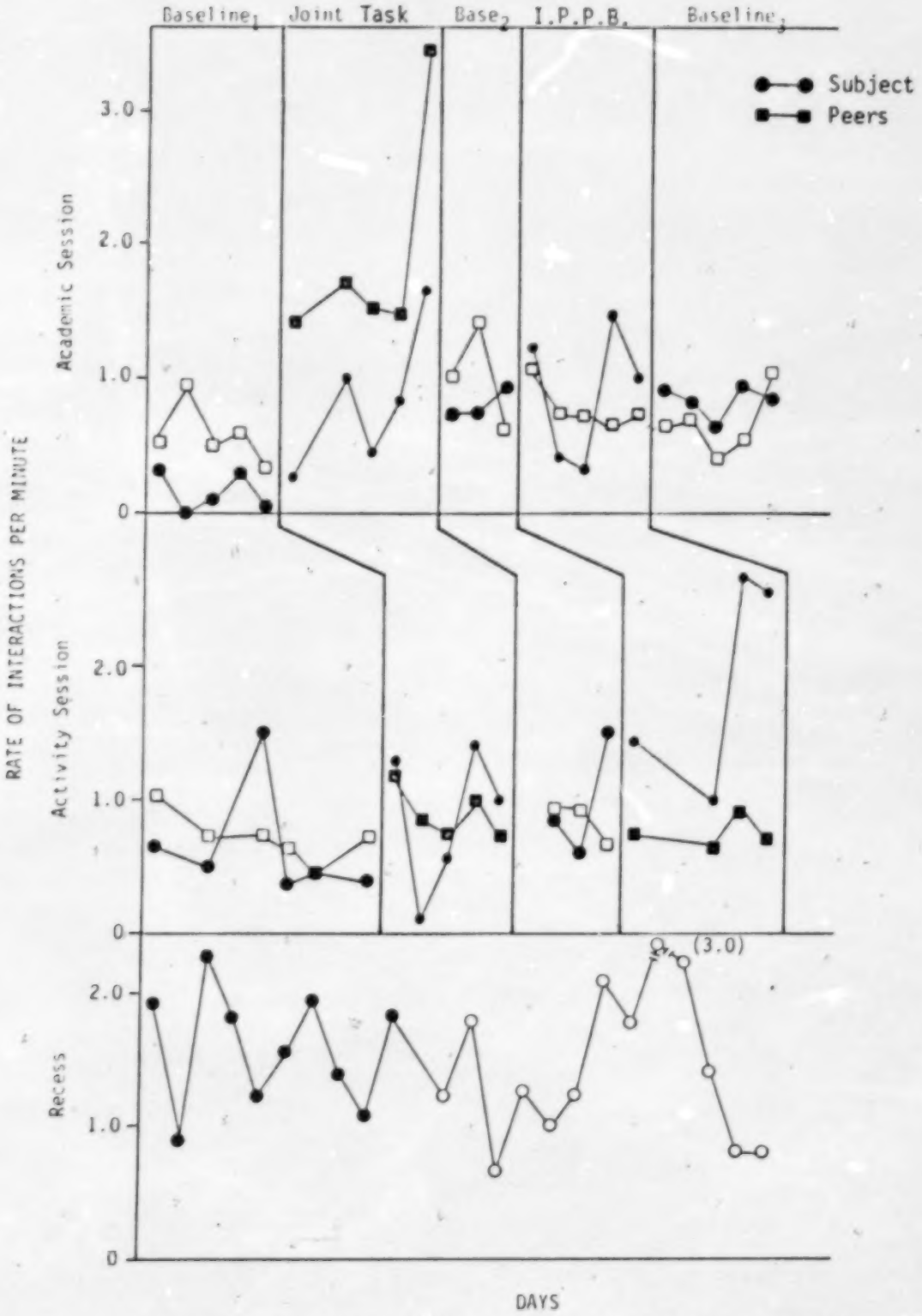

Figure 2. Mean daily interaction rates for subject and peers across settings and phases.

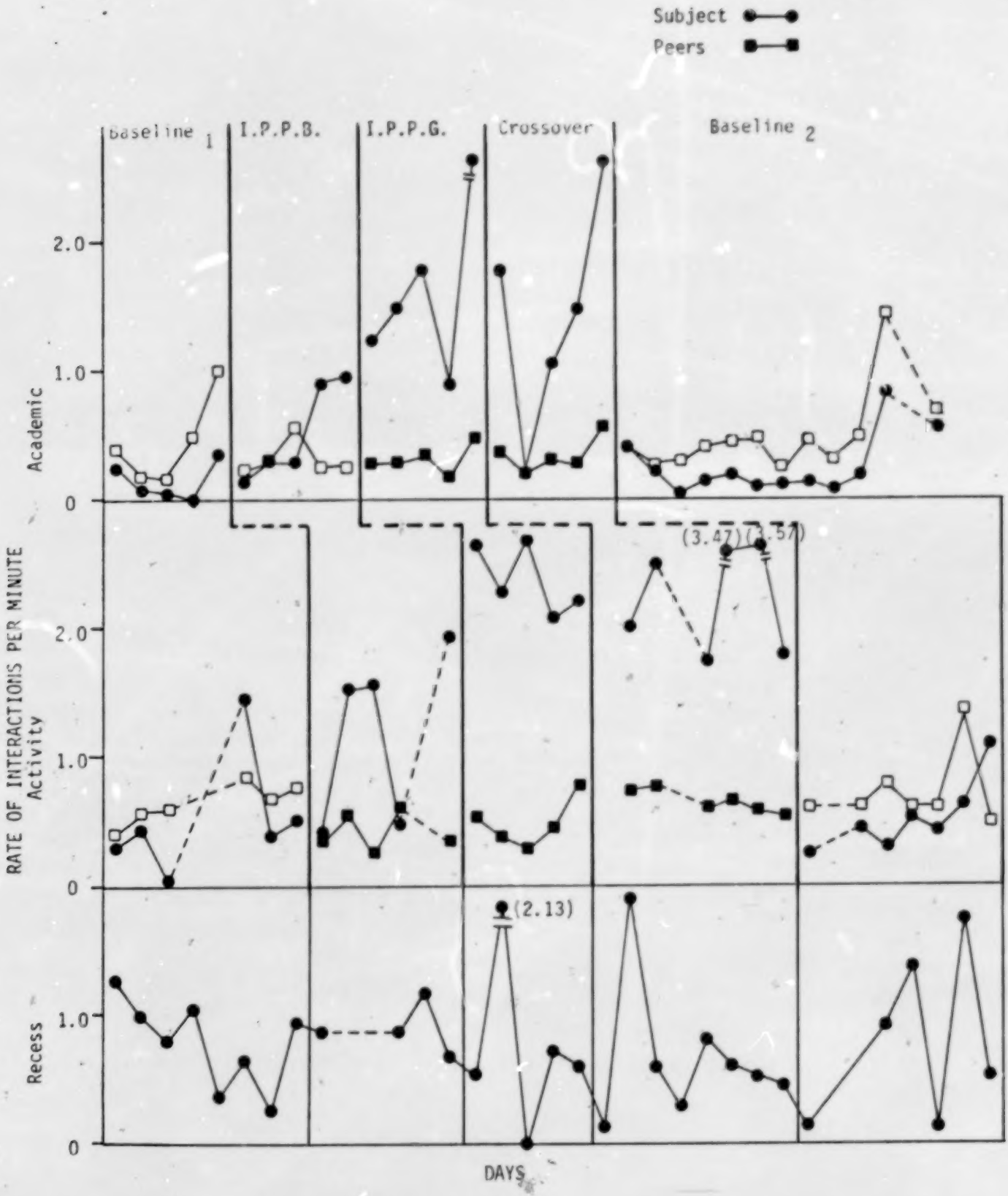

Figure 3. Mean daily interaction rates for subject and peers across settings and phases.

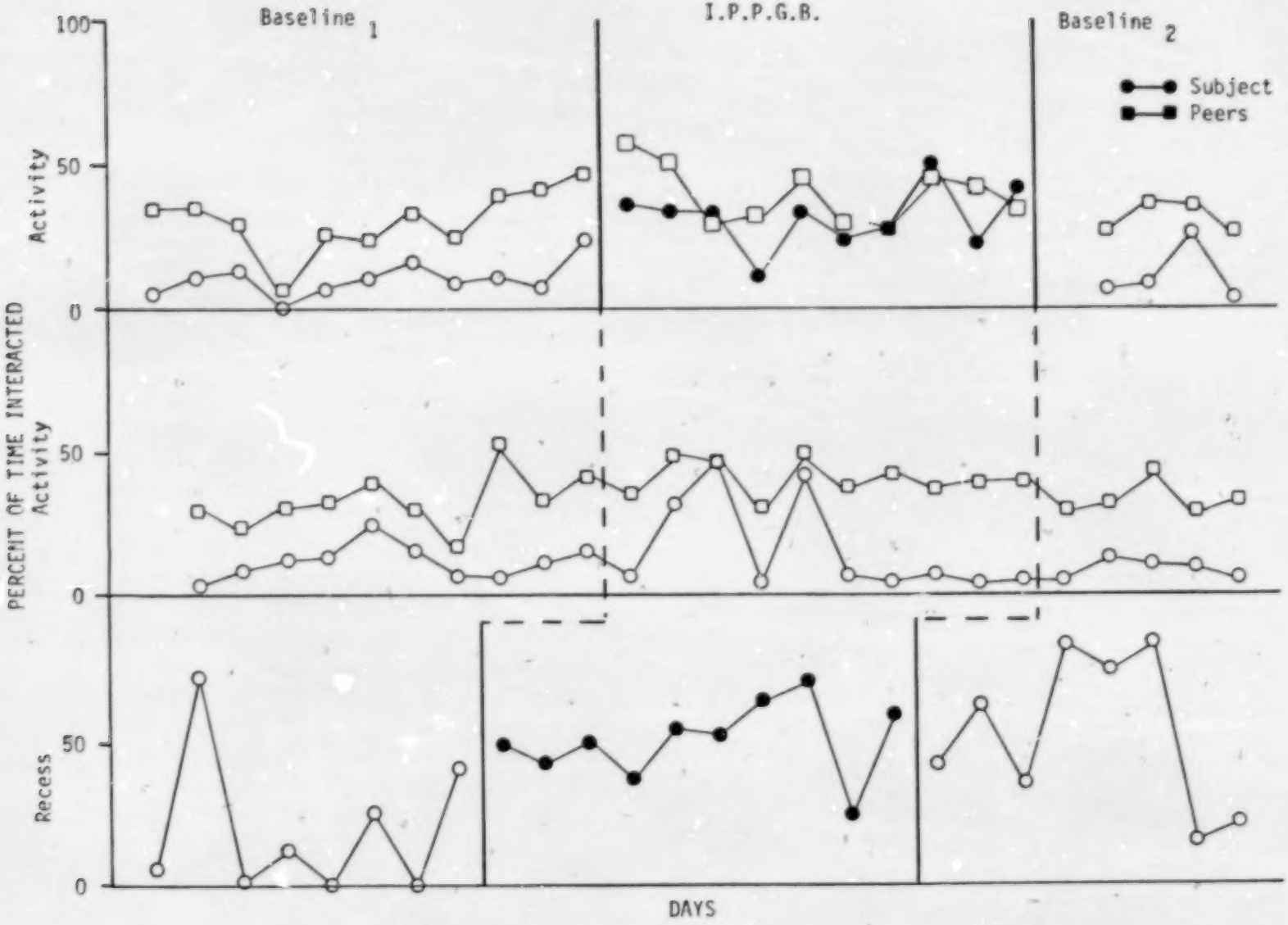

Figure 4. Mean percent of time interacted for subject and peer group across settings and phases.